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A. W. Walker Jr.

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By A. W. WALKER, JR.*

Land is customarily described as if it consisted merely of a certain number of surface acres. The outer boundaries of the surface acreage can be located by a survey on the ground, and a fence may be placed by the landowner along the surveyed lines which stand as visible evidence to the world of the extent of his ownership. The landowner, looking across the surface of his land, may with justifiable pride say, "This is my land—I own everything enclosed within my fence."

The lawyer knows that this is a superficial concept of the nature and extent of land ownership. A landowner owns, not the land, but only such rights in land as the courts will recognize and protect. White it is customary and convenient to speak of "title" to and "ownership" of physical property, in a strict legal sense these terms do not describe specific property interests. Ownership consists not of the physical property itself, but of a complex group or bundle of legally enforceable rights, powers and privileges with respect to that physical property. Nor, does the physical property to which those legal rights pertain consist merely of the surface of the land as measured on an acreage basis and marked by fences. It is a maxim of the common law, familiar to all lawyers, that "land," in its legal significance, extends from the surface downwards to the center of the earth and upwards indefinitely to the skies.

"Land", therefore, as a subject of property, should be visualized not as a flat plane but as a three-dimensional area having heighth and depth as well as width and length. Within this area and in a state of nature are to be found many different types of physical substances in addition to the soil itself, such as the atmosphere above the surface, wild animals on the surface, diffused surface waters, water in natural surface lakes, water in natural watercourses, sub-surface percolating waters, subsurface solid minerals, and in the case of some fortunate landowners, subsurface oil or gas. While the exclusive right of possession of the landowner extends to the entire three-dimensional area within which these various physical substances are found, the law does not recognize that the landowner "owns" or "possesses" all of them. Indeed, the landowner's legal rights in and to these various substances found over, on or under the surface of the land owned by him differ greatly.

With the exception of oil and gas, our law with regard to property rights in these various physical substances had its origin in the common law of England. While there were no English precedents with regard to property rights of a landowner in oil and gas, there was a fundamental common-law concept which has greatly influenced the development of the law in the various producing states with regard to the nature of the land owner's property rights in oil and gas i.e. the concept of possession.

Indeed, it would be difficult to over-estimate the importance of the concept of possession in the determination of property rights under our

*Law firm of Robertson, Jackson, Payne, Lancaster & Walker; former Professor of Law, University of Texas; Dallas, Texas.

common-law system. Most of the common-law forms of action for the protection of rights in physical property were possessory actions maintainable only by a person in possession, or with an immediate right to possession. While actual possession in a legal sense is difficult to define, the principal elements undoubtedly are a present power of control accompanied by an intent to control.[1] The landowner is regarded as having "title" to those natural physical substances found within the area comprising his land which are in his possession, such as the soil itself, water confined within a pond on the surface of his land, and the solid minerals beneath the surface. He has the present power of control and the intent to control these substances. Likewise, he can acquire "title" to other natural physical substances, of which he does not have possession, by legally reducing them to possession on his land, such as wild animals, diffused surface waters, and waters withdrawn from natural watercourses. With regard to percolating underground waters, the law is not uniform. Some states follow what is called the "absolute ownership" rule as to percolating underground waters, which seems to be merely a rule permitting an unlimited right of withdrawal, while others follow a "reasonable use" rule which restricts the landowner's right of withdrawal upon some standard of reasonable use.[2]

When the courts in the United States were first called upon to determine the nature of the landowner's property rights in the oil and gas beneath his land they suffered from two handicaps: there were no common-law precedents, and there was practically no scientific information with regard to the nature of oil and gas deposits beneath the surface. It is not surprising, therefore, that the courts undertook to apply by analogy the precedents applicable to some other physical substances which the court considered to resemble oil or gas in some legally significant respect.

Summers in his valuable work on *Oil and Gas*[3] has compared this judicial process to the six blind men of Indostan who, upon feeling separate parts of an elephant's anatomy, declared the elephant to be some other type of animal with which they were already familiar, depending upon what part of the elephant each had touched. Some courts said that oil and gas were minerals found in rock formations beneath the surface and applied by analogy the law of solid minerals. Other courts, impressed by the fact that oil is a fluid found in rocks beneath the surface, thought that the law applicable to subterranean waters should be applied. Still other courts, erroneously thinking that oil and gas were migratory in their natural state, fancifully compared these minerals to wild animals.

The analogy to wild animals was never carried to its logical conclusion even in Pennsylvania where it was first announced.[4] Indeed, that state adopted the ownership-in-place theory. As pointed out by the Supreme Court of the United States in the early great case of *Ohio Oil Co. v. The State of Indiana*,[5] if the analogy to wild animals was complete, it would follow not only that the landowner has no "title" to the oil and gas beneath

[1] HOLMES, COMMON LAW, 206-246 (1881); POLLOCK AND WRIGHT, ESSAY ON POSSESSION IN THE COMMON LAW (1883); SALMOND, JURISPRUDENCE (7th ed.), 293-328 (1924).

[2] See annotations in 55 A.L.R. 1388; 109 A.L.R. 397.

[3] 1 SUMMERS, OIL AND GAS (Perm. ed.), 20-27.

[4] Westmoreland & Cambria Natural Gas Co. v. DeWitt, 130 Pa. 235, 18 A. 724, 5 A.L.R. 731 (1899).

[5] 177 U.S. 190, 20 Sup. Ct. 576, 44 L. Ed. 729 (1900).

his land but also that he would have no character of "property" interest in the oil and gas that would be subject to constitutional guarantees against the taking of "property" since it is well-established that game laws which completely deprive a landowner of his right to capture wild animals on his land are valid inasmuch as they do not involve the taking of property. The court in that early case recognized, as it is generally recognized today, that there is no complete analogy between oil and gas and any of the other physical substances found over, on, or under the surface of the land. They are a unique species of property and property rights in them must be determined upon the basis of their own peculiarities.

All oil and gas producing jurisdictions now recognize that the landowner has some type of "property" interest in the oil and gas beneath his land which is subject to protection against confiscation by state or federal legislation. This property interest is something more than the exclusive privilege to drill wells on his land in search for oil and gas. The landowner has a somewhat similar exclusive privilege to hunt for wild animals on his land, but he has no property interest in the wild animals themselves until reduced to possession. All courts apparently recognize that a landowner does have some type of "property" interest in the oil and gas beneath his land even before it is reduced to possession. The difficulty has been in identifying the exact nature of this property interest. Does it amount to "title," or to something less than "title"?

What is there in the physical nature and condition of these substances as they exist in an underground reservoir which has caused this difficulty in identifying the nature of the landowner's property interest in them? Oil and gas are inanimate objects. Contrary to early beliefs, we know today that they are not found in underground running streams or ponds, and that they do not percolate through subsurface strata like subterranean water. Instead, oil and gas as usually encountered merely occupy the minute pore spaces in some sandstone, limestone or other porous formation. They are not migratory in their natural state. Indeed, we know that it is absolutely essential to the existence of commercial deposits of oil and gas that they be securely entrapped within a closed subsurface structure from which escape is impossible. If this reservoir is located entirely beneath one landowner's land—and there are some such reservoirs—the landowner has complete control of the oil and gas beneath his land. Under such circumstances it would seem clear that the landowner has possession since the oil and gas is within his exclusive power of control. No possible objection is seen to regarding him as also having title.

Where, however, various landowners own lands overlying a common reservoir of oil and gas the power of control of each individual landowner over that part of the oil and gas underlying his land is not complete. Collectively, the landowners over the common reservoir do have absolute control over the entire deposit of oil and gas. In this respect their power of control over the oil and gas is entirely unlike their power of control—or, rather, lack of power of control—over wild animals on their land, or over subterranean water percolating through their lands. However, the individual landowners over the common reservoir cannot prevent such drainage of oil or gas from their lands to the lands of other landowners over the same

reservoir as will naturally occur by reason of pressure variations within the common reservoir resulting from drilling and producing operations.

The fact that oil and gas are not respecters of man-made private-property lines in their obedience to the laws of physics has caused courts the greatest difficulty in deciding the exact nature of the landowner's property interest in these minerals. As a practical matter, because of the manner in which oil and gas must be produced by means of wells drilled into the saturated underground formation, the courts were virtually compelled to decide—as they did—that a landowner could not be held liable for drainage of oil or gas from his neighbor's land resulting from otherwise legal and non-negligent producing operations, and that an operator had title to all oil and gas produced from his well even though some of the oil or gas produced from his well might have been located under his neighbor's land when it was in its natural state in the reservoir. This rule of non-liability for drainage, commonly referred to in recent years as the "Rule of capture," is believed to be the law in all oil and gas producing states, although the unlimited right to drill and to produce has been greatly modified and regulated by conservation laws or regulations.

The rule, and the reason for the rule, was early expressed by a Pennsylvania Court in *Barnard v. Monongahela Natural Gas Co.*[6] as follows:

> " 'The right of every landowner to drill a well on his own land at whatever spot he may see fit' certainly must be conceded. If, then the landowner drills on his own land at such a spot as best subserves his purposes, what is the standing of the adjoining landowner whose oil or gas may be drained by this well? He certainly ought not to be allowed to stop his neighbor from developing his own farm. There is no way of ascertaining how much of the oil and gas that comes out of the well was when it was in situ under this farm and how much under that. What then has been held to be the law? It is this, as we understand it, every landowner or his lessee may locate his wells wherever he pleases, regardless of the interests of others. He may distribute them over the whole farm or locate them only on one part of it. He may crowd the adjoining farms so as to enable him to draw the oil and gas from them. What then can the neighbor do? Nothing; only go and do likewise. He must protect his own oil and gas. He knows it is wild and will run away if it finds an opening and it is his business to keep it at home. This may not be the best rule but neither the Legislature nor our highest court has given us any better."

While this rule has been criticized, it is difficult to see how any other rule could have been adopted by the courts. An operator should not be required to get a court decree in order to make a well location or to fix the amount of oil or gas that he may legally produce. Judicial processes are not appropriate to control such matters as the spacing and location of wells or to regulate the production from wells. These are matters that can only be regulated by administrative agencies under statutory authorization.

If the courts, in the absence of legislation, had entertained suits to enjoin the drilling of wells which would cause drainage, or if they had held that landowners, or their lessees, are liable in damages for draining oil and gas from beneath their neighbors' lands, the development of any oil and gas

[6] 216 Pa. 362, 65 A. 801 (1907).

field would have necessitated the filing of innumerable actions and cross-actions for the protection of property rights. Indeed, as a result the lawyers probably would have profited more from the development of an oil and gas reservoir than the producers. The remdy of self-help by the drilling of offsetting wells to counteract or equalize drainage across private-property lines quite properly appealed to the courts as a more practical remedy for the landowner being drained than the allowance of a judicial remedy either by way of an injunction or in the form of a monetary recovery of damages for drainage.

The adoption of this rule of non-liability for drainage, or so-called "rule of capture," posed difficulties, however, in regarding the landowner as having title to the oil and gas beneath his land. How could he be said to have "title" when he did not have a sufficient power of control to prevent his neighbor from draining some of his oil and gas from beneath his land, and, particularly, when the courts held that he could not recover from his neighbor for having done so? Some courts concluded that these objections were sufficient to preclude recognition of "title" in the landowner, while other courts decided otherwise, with the result that today we have some jurisdictions following an ownership theory and other courts following a non-ownership theory. This is probably an over-simplification of existing theories of property rights in oil and gas, but is sufficiently accurate for the purposes of this discussion.

It is of interest to note how Texas, one of the leading "ownership" states, has answered the objections made in "non-ownership" states to the adoption of the "ownership" theory. In *Stephens County v. Mid-Kansas Oil & Gas Co.*,[7] the Supreme Court of Texas stated:

> "The objection lacks substantial foundation that gas or oil in a certain tract of land cannot be owned in place, because subject to appropriation, without the consent of the owner of the tract, through drainage from wells on adjacent lands. If the owners of adjacent lands have the right to appropriate, without liability, the gas and oil underlying their neighbor's land, then their neighbor has the correlative right to appropriate, through like methods of drainage, the gas and oil underlying the tracts adjacent to his own. * * * Ultimate injury from the net results of drainage, where proper diligence is used, is altogether too conjectural to form the basis for the denial of a right of property in that which is not only plainly as much realty as any other part of the earth's contents, but realty of the highest value to mankind, and often worth far more than anything else on or beneath the surface within the proprietor's boundaries."

The "correlative right" to which the court referred is the remedy of self-help by the drilling of offset wells which will serve to equalize the net drainage between the two tracts. The principle apparently enunciated is that there is no need to give an injured party a cause of action for the violation of some legal right resulting from a reasonable use of adjacent land if the aggrieved party's remedy of self-help is reasonably adequate for his protection. This principle has been applied in denying a judicial remedy for the invasion of a landowner's exclusive right of possession by branches of trees growing on adjacent lands. Some courts have held that the remedy

[7] 113 Tex. 160, 254 S.W. 290, 29 A.L.R. 566 (1923).

of self-help by cutting the overhanging branches is adequate, and that no judicial remedy is necessary. For example, the Supreme Court of Massachusetts, in a case[8] of this type, declared:

> "His remedy is in his own hands. The common sense of the common law has recognized that it is wiser to leave the individual to protect himself, if harm results to him from this exercise of another's right to use his property in a reasonable way, than to subject that other to the annoyance, and the public to the burden, of actions at law, which would be likely to be innumerable, and, in many instances, purely vexations."

Perhaps the landowner's remedy of self-help by drilling of offsetting wells for the purpose of counteracting and equalizing drainage is not as completely adequate as the self-help remedy available to a landowner who objects to the intrusion of the branches of his neighbor's trees across his boundary line. In any event, the courts of the states folowing the "non-ownership" theory have not thought this or any other answer to be sufficient to support a theory of ownership-in-place of oil and gas.

One of the best-reasoned cases following what may be classified generally as a "non-ownership" theory is the early United States Supreme Court case of *Ohio Oil Co. v. The State of Indiana.*[9] While the court in that case did not regard an individual landowner over a common reservoir of oil and gas as having title to the specific oil and gas beneath his land, it did recognize that he had a "property" interest in the oil and gas in the common reservoir which was subject to constitutional protection. It pointed out that the public-at-large had no property rights in the oil and gas confined within a reservoir underlying the lands of a limited group of landowners. Indeed, it referred to this limited group of landowners as the "collective owners" of the oil and gas, stating that each landowner had a "co-equal right—to take from a common source of supply," and held that the legislative power of a state could be exercised for the purpose of protecting these private property rights by preventing one of the landowners over the common reservoir from wasting gas produced from the common source of supply to the injury of others having co-equal rights to take oil and gas therefrom.

The idea behind this theory seems to be that the oil and gas is securely entrapped in a reservoir located entirely within lands owned by a limited group of landowners. Collectively, although not individually, these landowners have control over the oil and gas and possession of it, and, therefore, may be regarded as "collective owners" of it despite the fact that it may migrate back and forth across the property lines of this limited group of landowners.

This case is frequently cited with approval, in "ownership" states as well as in "non-ownership" states for its recognition of the existence of "correlative rights" between the owners of land overlying a common reservoir of oil and gas, and no reason is seen why the "ownership" theory should be regarded as inconsistent with the recognition of the existence of correlative rights between the various landowners. As a matter of fact, there are correlative rights between landowners even in the use and enjoyment of the

[8]Michalson v. Nutting, 275 Mass. 232, 175 N.E. 490, 76 A.L.R. 1109 (1931).
[9]177 U.S. 190, 20 Sup. Ct. 576, 44 L. Ed. 729 (1900).

surface of their lands. No landowner has the right to use the surface of his land to the extent that he unreasonably interferes with the correlative right of his neighbor to use and enjoy his land. Similarly, no landowner, even if he is regarded as owning the oil and gas beneath his land, has the right to drill for and produce that oil and gas in a manner which unreasonably interferes with his neighbor's correlative right to drill for and produce his oil and gas.

Nor, is it believed that the so-called "rule of capture," properly understood, is in any way inconsistent with the existence of "correlative rights."[10] Certainly, this is true if the "rule of capture" is regarded in its true light merely as a rule of non-liability for drainage. If—and this argument is sometimes made—it should be regarded as giving an affirmative right in the nature of a property right to capture a neighbor's oil or gas, it may be urged that the recognition of such an affirmative property right in each landowner would be inconsistent with the recognition of any correlative rights between them. This argument, however, defeats itself for if each landowner has such an affirmative right the exercise of this right by any one of the landowners impinges upon the exercise of similar affirmative rights of the other landowners, and the courts are compelled to recognize the existence of correlative rights. Moreover, this is not believed to be a proper view of the "rule of capture," which is merely another name for the rule of "non-liability for drainage."[11] For example, in Texas, an ownership state, it is held that both the "rule of capture" and the doctrine of "correlative rights" are applicable in solving property-right problems involving oil and gas.[12]

It is important to understand that landowners over a common reservoir have correlative rights in the oil and gas within that reservoir regardless of whether the jurisdiction follows the "ownership" theory or the "non-ownership" theory, and that the rule of non-liability for drainage, or so-called "rule of capture" is not inconsistent with the recognition and enforcement of these correlative rights. Legislation is not necessary for the creation of correlative rights. Those rights already exist at common-law. Legislation, however, is needed to give more effective protection to the correlative rights of the owners over a common reservoir than can be given by the courts by means of ordinary judicial processes. When a legislature enacts laws which regulate drilling and producing operations for the protection of correlative rights it is not changing the common law property rights of a landowner in the oil and gas beneath his land.[13] It is protecting those rights by imposing restrictions upon the drilling and producing operations of each landowner or operator which will increase the total recovery of oil and gas from the reservoir, and which enable each landowner to secure his fair share of such increased recovery. It is merely extending greater protection to the

[10]R. E. Hardwicke, *The Rule of Capture and Its Implications As Applied to Oil and Gas* (1935), 13 TEXAS LAW REV. 391.

[11]A. W. Walker, Jr., *Property Rights in Oil and Gas and Their Effect Upon Police Regulation of Production* (1938), 16 TEXAS LAW REV. 370.

[12]Brown v. Humble Oil & Refining Co., 126 Tex. 296, 83 S.W.2d 935, 87 S.W.2d 1069, 99 A.L.R. 1107 (1935).

[13]Legislative controls for the purpose of protecting correlative private rights are valid even when not imposed for the purpose of preventing waste in the public interest. Corzelius v. Harrell, 143 Tex. 509, 186 S.W.2d 961 (1945). See, also, Thompson v. Consolidated Gas Utilities Corp., 300 U.S. 55, 57 Sup. Ct. 364, 81 L. Ed. 510 (1937).

correlative property rights of the landowners by legislative and administrative processes than the courts were able to extend by reason of the limited scope of judicial processes.

As a matter of fact, the particular theory adopted by a producing state —although it has important legal consequences in other respects—has had little effect upon the landowner's rights to drill for and produce oil and gas beneath his land. His rights in this respect are very similar in all jurisdictions. Whether or not he is regarded as having "title," he is regarded as having a "property" interest. In the absence of some controlling statute or administrative regulation, he may locate his wells on his land wherever he desires, and he has title to all oil and gas legally produced from his wells regardless of where this oil or gas may have been originally located in the reservoir. These rights to drill and to produce, however, in all jurisdictions may be regulated and controlled by the state in the exercise of its police power either for the purpose of protecting the correlative private-property rights of the landowners over a common reservoir or for the purpose of protecting the public's interest in the conservation of these natural resources of the state. It will be noted that regulations for the prevention of waste may be sustained on either one or both of these police power purposes.

Even without the aid of legislation the judicial process was effective to give some protection to the correlative property rights of the landowners over a common reservoir. While drainage *per se* was not actionable it was recognized that acts of a producer which were injurious to the common reservoir might be actionable. For example, it was early declared in *Manufacturers' Gas & Oil Co. v. Indiana Gas & Oil Co.*,[14] that, "Independently, however, of any statute,—the common owners of the gas in the common reservoir, separately or together, have the right to enjoin any and all acts of another owner which will materially injure, or which will involve the destruction of the property in the common fund or supply of gas." In that case it was claimed that a pump being used to increase the flow of gas from a well threatened to injure the common reservoir by causing the rapid encroachment of salt water into the gas section of the producing formation. Other examples of actionable wrongs at common law by one of the producers from a common reservoir are cases where judicial remedies have been recognized for the prevention of waste of gas from a well,[15] or where damages have been recovered against one operator for injury to the reservoir caused by the use of an excessive charge of nitroglycerin in shooting a well.[16]

Sometimes great injury is done to a reservoir by the blow-out of a gas well as a result of the negligence of an operator, and there have been several cases wherein some of the other operators have sought to recover damages for the resulting injury to their property. In *Elliff v. Texon Drilling Co.*[17] landowners sued the operator of an adjoining tract of land for damages resulting from such a blow-out. It was established that the blow-out resulted

[14]155 Ind. 461, 57 N.E. 912, 50 L.R.A. 768 (1900).

[15]Louisville Gas Co. v. Kentucky Heating Co., 132 Ky. 435, 111 S.W. 374 (1909).

[16]Comanche Duke Oil Co. v. Texas & Pacific Coal & Oil Co., 298 S.W. 554 (Tex. Comm. App., 1927).

[17]146 Tex. 575, 210 S.W.2d 558 (1948), subsequent opinion in Texas Court of Civil Appeals, 216 S.W.2d 824 (1948).

from the negligence of the operator, and that a large amount of the gas and distillate under the land of the plaintiffs had been caused to drain onto the land of the defendant and to escape into the air through the crater caused by the blow-out. The plaintiff-landowners had leased their land to a different operator, reserving a royalty, and the jury found that their royalty share of the gas and distillate which had been drained from their land and lost into the air had a market value of $148,548.00, for the value of which judgment was given. This judgment was affirmed on appeal.

This case is of particular interest because of the fundamental questions of property law involved. The defendant contended that while it might be held liable for damages to the reservoir, the law of capture precluded the plaintiffs from recovering for the value of the gas and distillate which had drained from their lands onto the land of the defendant, and which thereafter was wasted into the air. It was urged that under the rule of capture this gas and distillate ceased to be the property of the plaintiffs and became the property of the defendant as soon as it crossed the boundary line between the two tracts of land. The court stated that while "under the law of capture there is no liability for reasonable and legitimate drainage," and while "there is a certain amount of reasonable and necessary waste incident to the production of oil and gas to which the non-liability rule must also apply, we do not think this immunity should be extended so as to include the negligent waste or destruction of the oil and gas." The following statement of the court is of particular interest:

> ". . . the negligent waste and destruction of petitioners' gas and distillate was neither a legitimate drainage of the minerals from beneath their lands, nor a lawful or reasonable appropriation of them. Consequently, the petitioners did not lose their right, title and interest in them under the law of capture."

In addition to the important limitation placed by the court upon the application of the rule of capture, it should be noted that this is one type of case where the theory ownership or non-ownership became important, not as to the availability of a remedy, but as to the proper measure of damages. The measure of damages applied in that case would probably not be appropriate in a non-ownership state.[18]

While the courts have been willing, without the aid of a statute, to enjoin specific producing operations causing waste or injury to the common reservoir, or to award monetary damages for negligent injuries to the property rights of a landowner in the oil and gas beneath his land, they have been unwilling, unless specifically authorized by statute, to issue mandatory decrees requiring an operator to join with other operators in future joint programs for preventing waste by increasing the ultimate recovery from a reservoir. For example, a California court in *Western Gulf Oil Co. v. Superior Oil Co.*[19] stated that it could not issue a mandatory decree re-

[18]See, McCoy v. Arkansas Natural Gas Co., 175 La. 487, 143 So. 383, 85 A.L.R. 1147, on second appeal, 191 La. 332, 185 So. 274 (1938). In the *Eliff* case the court assumed without expressly deciding that the lease executed by the plaintiffs had not divested them of title in place to their royalty one-eighth of the gas. Where the royalty on gas is a fractional share of the market value of the gas it is usually held that title to all of the gas is vested in the lessee.

[19]92 Cal. App. 2d 299, 206 P.2d 944 (1949). Actually the relief sought by the pleadings of the plaintiffs in this case was not for a mandatory decree requiring the defendants to join in a unit operation program, but was to enjoin the defendants from

quiring gas to be re-injected in the reservoir although this would have prevented waste. The court considered that the prevention of waste by the inauguration of joint, expensive programs of this nature involved questions of public policy within the purview of the legislative power but beyond the power and jurisdiction of the courts. The Supreme Court of Arkansas adopted a similar view in the case of *Dobson v. Arkansas Oil & Gas Commission*[20] in holding that even an administrative agency with broad statutory powers to prevent waste could not enter a compulsory unitization order for the prevention of waste without express statutory authority.

While conservation statutes and administrative regulations issued pursuant thereto are beyond the scope of the topics assigned to me for discussion, it should be noted that the restrictions sometimes imposed thereunder upon the common-law rights of a landowner are frequently attacked on constitutional grounds as constituting an unlawful taking of property. Such attacks have required the courts to examine carefully the exact nature of a landowner's property right, and to undertake to define that property right. For example, in cases of this type of Texas courts have declared that, "Every owner or lessee is entitled to a fair chance to recover the oil or gas in or under his land, or their equivalent in kind, and any denial of such fair chance amounts to confiscation."[21]

It is believed that this is a reasonably accurate general statement of the landowner's property right whether his land is located in an "ownership" state or a "non-ownership" state. Implicit in this definition of a landowner's property right is the recognition of correlative rights since each landowner must be protected against confiscation on the same basis as every other landowner. It will be noted, however, that all the law requires is that each landowner be given a "fair chance" to recover from the common reservoir his just share of the oil and gas. If he fails to avail himself of this opportunity by properly developing his land, he has no legal right to complain. And it will be noted further that this statement of the nature of his property right also defines what he should have a "fair chance" to recover; i.e., the oil or gas in or under his land, or their equivalent in kind. It recognizes that drainage will occur, and that it is impossible even for a diligent operator to recover the specific oil and gas under his land, but he should be entitled to a chance to recover oil and gas of an amount equivalent to the recoverable oil and gas under his land.

This general statement, however, does not specifically cover one aspect of the problem. Is the amount of oil and gas which a landowner should have a "fair chance" to recover the amount which was beneath his land at the time the reservoir was first discovered, or the amount of oil that is beneath his land from day to day as the reservoir is depleted by production? It could not very well be the amount in place beneath each landowner's land at the time the field was first discovered since all lands over the reservoir are not developed at one and the same time. Land that is not placed in

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conducting their operations in a wasteful manner, it being alleged that plaintiffs had offered to permit the defendants to join in a unit operations program which would prevent waste.

[20]218 Ark. 160, 235 S.W.2d 33 (1950).

[21]Marrs v. Railroad Commission, 142 Tex. 294, 177 S.W.2d 941 (1944).

production until late in the life of the field must necessarily suffer loss from drainage to the more diligent operators.

Furthermore, we know today that there is not only local drainage between adjacent properties but in many fields that there is also regional or field-wide drainage due to expanding gas caps exerting pressure down-structure against the face of the oil at the point of gas-oil contact, or due to a water-drive exerting a pressure up-structure against the face of the oil at the point of oil-water contact. For example, in the East Texas field the regional water drive is constantly pushing oil up-structure from west to east. As a consequence of this regional drainage there is today beneath some of the lands on the eastern side of the reservoir as much oil as was beneath those lands when the field first began to produce some twenty-five years ago. And the same amount of oil will be beneath those lands ten years from now since as oil is withdrawn from those lands it is constantly being replaced with oil from the west.

The extent and efficiency of this regional drainage in the East Texas field has doubtless been greatly increased over what it would have been under unregulated production by reason of re-injection of salt water along the western edge of the field and by the stringent curtailment of oil production under proration orders designed to preserve uniform bottom-hole pressures in the field. In other words, the natural advantages enjoyed by properties located far above the water-oil contact level have been increased by artificial means so that drainage to those properties is in excess of what it would have been in the absence of these artificial factors. Furthermore, the efficient water-drive resulting from salt-water injection and pressure maintenance has greatly increased the amount of oil which will be ultimately recovered from this field. Nevertheless, the Railroad Commission of Texas has not deemed the increased regional drainage to be a factor for consideration in formulating proration orders for the East Texas field.

Disregarding exceptional situations of this kind, it would seem that, under conservation regulations which do nothing more than control the spacing of wells and prorate the production of those wells currently on a day-by-day basis, the "fair chance" to recover the oil and gas beneath a tract of land, or its equivalent in kind, must refer to the oil and gas which is from day-to-day beneath the land, and not to the amount of oil and gas originally in place beneath the land. This view, of course, assumes that any natural advantages from regional drainage which would have been enjoyed at common law under unregulated production by reason of the favorable location of a tract of land on the structure should be preserved. The extent to which artificially increased regional drainage resulting from this type of regulatory control should be considered in formulating a fair proration order presents difficult engineering as well as legal problems which yet remain to be solved.

Proration formulas are many and varied but it is the usual practice, when a field is produced on a competitive basis under this type of regulatory control, to adopt a proration formula under which the total field allowable is allocated among the various producing wells upon a basis which gives each operator a "fair chance" to recover the oil and gas beneath the acreage assigned to each well, or its equivalent in kind, during the time the order is

to remain in effect. As the field is depleted, however, revisions are made in the distribution of the field allowable on the basis of changed conditions.

Where a reservoir is unitized for the purposes of production, however, other factors are involved. In such cases usually a pressure maintenance or re-pressuring program is inaugurated to supplement natural reservoir pressures or to supply entirely new pressures. Each landowner contributes at one and the same time, i.e. the time of unitization, the oil beneath his land to the common fund and reaps the benefit thereafter of greatly increased production due to the artificially supplied pressures which all of the operators have joined together in supplying to the common reservoir. Frequently, the ultimate production from the reservoir may be two or three times what it would have been if only natural reservoir pressures had been utilized in producing the oil. Each landowner's just, proportionate share of the total recovery achieved by such artificial means in a unitized field should not be determined by the same standard that would have been employed if the reservoir had been depleted without unitization and by the use only of natural reservoir pressures. Under unitization all landowners share in the total recovery from the entire reservoir regardless of where the oil was produced, and their proportionate share of the total recovery is usually based upon some participation factor or formula which reflects the ratio between the recoverable oil in place beneath each landowner's land at the time unitization was effected and the total recoverable oil in the entire reservoir at that time. This participation factor remains constant until the entire reservoir has been depleted, with the result that an individual landowner may continue to receive his fixed percentage share of the production from the entire reservoir long after all recoverable oil has been drained from beneath his particular tract of land.

Thus far we have discussed the property rights between the landowners over a common reservoir and the problems incident to drilling and producing conducted by each landowner or operator on his own land. Other problems are raised where the drilling or producing operations are conducted by a trespasser. Some of these will be briefly discussed.

It is interesting to note that what is believed to be the first case dealing with property rights in oil and gas beneath the surface involved a trespass. In 1854, some five years prior to the completion of the famous Drake well—the first well ever drilled for oil in the United States—a Kentucky court decided the case of *Hail v. Reed.*[22] The well involved—strange as it may seem to us today—had been drilled for the production of salt water, or brine, and the extraction of salt. The salt water formation apparently had been contaminated by the presence of oil, and a trespasser went on the land and by the use of a bucket removed some of the oil that had collected on top of the brine in the well. In a suit brought for trespass and conversion of the oil the trespasser contended that, while he might be liable for trespass on the land, he could not be guilty of conversion of the oil since the landowner had never reduced it to possession. It was his position that oil was analogous to wild animals in which the landowner has no property interest until they are reduced to possession. The landowner contended that he was in possession of the oil just like he was in possession of solid minerals. The court did not find it necessary to decide which of these analogies was applicable

[22]54 Ky. (B. Mon.) 479 (1854).

since it concluded that, even if the oil while still in the well was not in the landowner's possession, nevertheless, the trespasser under established common-law principles would be regarded as having reduced it to possession for the landowner, and as having converted it after title had been vested in the landowner.

This case is interesting not only because it is apparently the first case to discuss property rights in oil, but also for the solemn declaration made by the court in its opinion that "oil is a peculiar liquid, not necessary nor indeed suitable for the common use of man." It apparently had some value, however, even at that early date—probably as a base for a patent medicine —since the plaintiff alleged that it had a market value of $1.45 per gallon, which any oil man today would regard as a pretty fair price for oil.

Trespass cases today are not so simple as this early case where oil was wrongfully taken by means of a bucket lowered into a well, but the principle of law announced in that case is equally applicable today. Most of our trespass cases today involve an unlawful entry into a landowner's land either by a well wrongfully located and bottomed on that land, or by a well lawfully located on one tract of land but wrongfully bottomed on another tract of land. In both types of cases the exclusive right of possession of the landowner has been violated by the physical location of the producing section of the well bore within a portion of the producing formation underneath the surface of that landowner's tract of land and within the three-dimensional area to which he has the exclusive right of possession. Whether or not the landowner is regarded as having title to the oil or gas so wrongfully removed from his land, in any event it has been reduced to possession by a trespasser, and the landowner should be permitted to recover for its conversion.

One of the most interesting cases involving a trespass by means of a directionally-drilled well is *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate.*[23] The Syndicate drilled two wells which were rightfully located on a tract of land 60 feet wide by 240 feet deep which overlaid a down-structure portion of the reservoir. Both wells departed several hundred feet from the vertical in an up-structure direction, and passed entirely through an adjoining tract of land and were bottomed on a third tract of land. The casing was perforated at the place where the well-bore penetrated the producing formation underlying both the intervening tract of land and the third tract of land. The case arose in California—a state which does not regard the landowner as having title to oil and gas in place. The defendant argued that the landowners over this common reservoir were collective owners in the sense that they had common rights to take from a common source of supply, and that it did not make any difference whether their wells were bottomed under their lands or under neighboring lands so long as they were bottomed in a common reservoir of which they were one of the co-owners. The court refused to follow this argument and stated that the defendant was guilty of a trespass.

The defendant advanced the further ingenious argument that even if it was guilty of a trespass, there could be no recovery against it unless the plaintiffs could prove that the wells of the defendant had already produced more than their just share of the oil out of the common reservoir. The basis

[23]24 Cal. App.2d 587, 76 P.2d 167 (1938).

of this argument was a contention that the co-owners over the common reservoir were cotenants of the oil in the reservoir, and that the plaintiffs had sustained no injury unless the defendant had already produced more than its just share as a cotenant. The court likewise refused to approve this theory of property rights in the common reservoir and held the defendant accountable for every barrel of oil produced, even though the wells, if they had been vertically drilled, might have ultimately recovered from the reservoir as much or more oil than had been produced to the time of trial by the directionally-drilled wells.

In many of the producing states today a special permit is required to be obtained by the operator from an administrative agency for the intentional drilling of a directional well, and many states require that a well survey be made of a well upon its completion, and will not grant it a production allowable if it departs more than a certain number of degrees from the vertical. These are desirable regulations since it is possible for an operator to secure a secret advantage over his neighbors by bottomoing his well under neighboring land, or even under his own land at some point more favorably located on the structure than the point directly beneath his authorized well location. As a practical matter, the discovery of this type of wrongful conduct is difficult, but the courts will in a proper case order a well survey to be made if the applicant is willing to execute an indemnity bond for damages that may be caused to the well as a result of the survey, and in the event that the survey reveals that the well was properly drilled.[24]

Where the trespass consists of the drilling of a well located and bottomed upon the same tract of land the problems are less difficult. In both ownership and non-ownership states the true owner would have title to all oil and gas actually produced from the well. The chief problem is one of damages. The general rule is that if the trespasser acted in good faith he should be allowed to offset against his liability for the market value of all oil and gas produced the reasonable costs incurred in producing the oil and gas, but that if he acted in bad faith this right of offset is denied.[25] The tests employed by the courts of the various states in determining whether the trespasser acted in good or bad faith are not uniform.[26] Some courts have been inclined to lay down arbitrary rules, such as whether the expenditures were made after notice of an adverse claim or after suit was filed by the adverse claimant, or even whether the mistake of the trespasser was one of law as distinguished from a mistake of fact. Other courts have made the *fides* of the trespasser purely a question of fact as to whether he had reasonable grounds to think that he had title. Where the latter standard is employed it would be seldom indeed that an oil operator would be considered a bad faith trespasser since only under exceptional circumstances would an operator risk the large amount of money required to drill a well unless he had some reasonable grounds to believe that he had title.

[24]Hastings Oil Co. v. Texas Co., 149 Tex. 416, 234 S.W. 2d 389 (1950) ; Williams v. Continental Oil Co., 215 F. 2d 4 (1954) ; Gliptis v. Fifteen Oil Co., 204 La. 896, 16 So. 2d 471 (1944).

[25]1 SUMMERS, OIL AND GAS (Perm. ed.), 48-65. Drilling costs may not be allowed in the exceptional case where the wells drilled by the trespasser are not needed by the true owner to produce his oil. Carter Oil Co. v. McCasland, 207 F.2d 728 (1953).

[26]KULP, OIL AND GAS RIGHTS, 531 ; 1 SUMMERS, OIL AND GAS, 35-48. See comment in 12 TEXAS LAW REV. 210.

There is much to be said in favor of this standard as applied to oil and gas operations. In the case of ordinary improvements on land the possessor can usually afford to defer making the improvements until an adverse claim of title has been settled. In the case of oil and gas property, however, the operator frequently holds under a lease which may terminate if he fails to drill. And, even if he is not compelled to drill in order to hold his lease, he may suffer great injury from drainage if he defers drilling operations until adverse title claims can be finally adjudicated.

An interesting question is presented when a judgment is secured against a good-faith trespasser who has not been producing long enough for the total market value of the oil and gas produced down to the time of the trial to equal the drilling and producing costs. He can, of course, offset those costs against his liability as a converter. However, he cannot obtain an affirmative judgment for the difference representing unrecovered drilling and completion costs.[27] He must surrender possession to the true owner with his producing wells and their equipment on the premises. In this situation it would seem that the good faith trespasser should be entitled to some type of relief. In some cases, it has been stated that an oil well is a permanent improvement as that term is used in the "betterment" statutes.[28] However, it would not appear to be fair to the true owner to require him to pay for the enhancement in the value of the land attributable to the unrecovered costs of the wells and equipment as a condition to being restored to possession of his land in accordance with the usual provisions of "betterment" statutes where other types of permanent improvements have been made on land by a good faith trespasser. This would put the risk upon the true owner of the wells continuing to produce enough oil to repay him the amount he was required to pay in order to obtain possession. An equitable solution of this problem might be to require the true owner, after being restored to possession, to pay over to the good faith trespasser the net profits derived by him from the production accruing from the wells drilled by the trespasser until the unrecovered well costs have been paid. In this manner the risk of continued profitable production would be placed on the party who should bear that risk; i.e., the good faith trespasser.

Trespassers do not always drill producing wells. Sometimes they, too, drill dry holes. Such few cases as we have on this problem are not in agreement as to the proper measure of damages. In Texas it has been held that the true owner is entitled to recover the decrease in market value of the leasing rights resulting from the drilling of a dry hole.[29] The good or bad faith of the trespasser was not considered to be legally important, nor was proof required of the loss of a specific bargain. The Wyoming Court[30] refused to follow this case, stating that the landowner should not be entitled to recover for the loss of the market value of something which the trespasser had proved had no value. Unquestionably, oil and gas rights in lands not known to contain oil and gas, and which may not contain oil and gas, frequently have a high market value. The problem of the extent to which this

[27] 1 SUMMERS, OIL AND GAS (Perm. ed) 60. .....

[28] Jenkins v. Pure Oil Co., 53 S.W.2d 497 (Tex. Civ. App. 1932). See also, Greer v. Stanolind Oil and Gas Co., 200 F.2d 920 (1952).

[29] Humble Oil & Refining Co. v. Kishi, 276 S.W. 190 (Tex. Comm. App. 1925), on second appeal, 299 S.W. 687 (Tex. Civ. App. 1927, error refused).

[30] Martel v. Hall Oil Co., 36 Wyo. 166, 253 P. 862, 52 A.L.R. 91 (1927).

speculative value should be protected may arise in many factual situations other than the drilling of dry holes by trespassers. Any satisfactory treatment of this difficult problem would require an extended discussion beyond the scope of this paper.[31]

This will permit, however, a general treatment of a few additional problems directly connected with the nature of a landowner's property rights in oil and gas beneath his land. It would seem clear that if a landowner is not regarded as having possession of and title to the oil and gas beneath his land, he cannot transfer possession and title to a third party. Accordingly, the theory of property rights in oil and gas obtaining in a particular jurisdiction is of the utmost importance in determining the nature of property rights in oil and gas which have been severed from the ownership of the surface of the land.[32] In an ownership state a landowner may sever, by grant or reservation, a fee simple estate (or any lesser estate) in the oil and gas separate and apart from the surface. This horizontal severance of the land is regarded as resulting in the creation of two separate and distinct possessory fee simple estates: the surface estate and the sub-surface oil and gas estate. In a non-ownership state this concept of severance is impossible. After severance there is still only one fee-simple possessory estate—the land —and it is burdened with an incorporal hereditament in the nature of a *profit a prendre.*

Likewise, the theory entertained in a particular jurisdiction is important in determining the nature of the estate vested in the lessee under an ordinary oil and gas lease. In an ownership state, since the lessor has a possessory fee simple title, the courts are free to construe the oil and gas lease as creating any estate known to the law. It can be regarded either as creating a possessory estate in the land; i.e., as a lease of the land for mining purposes, or a separate possessory estate in the oil and gas. Or, it can be regarded as creating a non-possessory interest in the land in the nature of a *profit a prendre.* In a non-ownership state it cannot be construed as creating a separate, possessory estate in the oil and gas although it can be construed as a mining lease creating a possessory estate in the land, or as creating a non-possessory estate in the land in the nature of a *profit a prendre.* In other words the ownership or non-ownership theory does not determine the exact nature of the lessee's estate. This is a metter of construction for the courts of each state, but the possible estates that may be regarded as created by an oil and gas lease are more restricted in a non-ownership state than in an ownership state.[33]

There would seem to be no difference between ownership and non-ownership states with regard to adverse possession of land prior to a severance of oil and gas rights from the land. The adverse possessor upon acquiring limitation title simply acquires all of the property rights of the former owner.

The difference in theories of property rights does become important, however, where adverse possession commences after oil and gas rights have been severed from surface ownership.[34] In an ownership state possession of

[31]See, KULP, OIL AND GAS RIGHTS, 533-534; 1 SUMMERS, OIL AND GAS (Perm. ed.) 65-77.
[32]The cases on severance will be found annotated in 29 A.L.R. 586 and 146 A.L.R. 880.
[33]KULP, OIL AND GAS RIGHTS, 578-581.
[34]KULP, OIL AND GAS RIGHTS, 519-525.

the surface by the surface owner or by a trespasser cannot constitute adverse possession of the severed oil and gas estate. The only way in which possession can be taken of the severed, possessory estate in the oil and gas is by the drilling of a well. In such states it is recognized that this is essential to start the statute of limitations running against the owner of the severed oil and gas estate. Likewise, it is held that an adverse possessor by the drilling and operation of wells may acquire limitation title to the severed oil and gas estate although he does not adversely hold or claim title to the surface estate.[85]

In non-ownership states, on the other hand, there is no separate, possessory oil and gas estate. The land is merely burdened with an incorporeal hereditament in the nature of a *profit a prendre*. Mere possession of the surface by the surface owner or by a trespasser would not be sufficient to give rise to a cause of action so as to start the statute running against the owner of the severed oil and gas rights. However, active interference, even by acts confined to the surface, by the surface possessor with the exercise of the rights of the owner of this *profit a prendre* would logically seem to start the running of the statute of limitations.

Many of the more specific problems with regard to adverse possession of oil and gas involved the interpretation of the language of local statutes of each state. In my own state of Texas, and I imagine this is true in your own states, our land limitation statutes were enacted prior to oil and gas development, and the statutory provisions were drafted to govern adverse possession by the occupancy of the surface of land. The language of these statutes is frequently exceedingly difficult to apply to an adverse possessor who occupies a subsurface estate only by means of wells drilled into that estate. No attempt will be made to disuss local problems of this type.

Indeed, the general problems which I have already attempted to discuss are so broad in their scope and fundamental in their nature that I realize, as I am sure that you now realize, that only the surface has been touched. Figuratively speaking in the language of the oil fields, I have been able to drill only a shallow hole into the great field of oil and gas law. I hope that it has not been entirely unproductive.

[85]Crawford v. Humble Oil & Refining Co., 150 S.W.2d 849 (Tex. Civ. App. 1941, error dismissed); Kilpatrick v. Gulf Production Co., 139 S.W.2d 653 (Tex. Civ. App., 1940 error dismissed).